The Solutions Network

Rochester, New York

DOD Renewables Purchasing Strategy

Objectives, Execution Options, and Plans to Date

Mike Warwick- August 2004

Objectives

- "Cheaper" (eliminate premium)
- "Better" (stimulate interest in on-base resource development for energy security and near base development for energy reliability)
- "Longer" (long-term, fixed price supply contract)
- "Greener" (meet current/future renewables goals, offset own air emissions)
- "Smarter" (alternative path to meet EO 13123 efficiency goals)

Cheaper/Longer
Objective: Reduce Premium

- Strategy- purchase majority of output from new resources at price lower than current green price
- Tactics
  - Aggregate loads to meet developer requirements (purchase must be large enough to help with financing)
  - Long term contract to underwrite construction
  - Tie price to construction cost (not market)
  - Buy early (lower cost project output from "best" sites)

Better
Objective: Energy Security/Reliability

- Strategies – Purchase from resources on/near installations. Implement "strategic island" concept with utility.
- Tactics
  - Regional purchase
  - Long term contract to underwrite development cost
  - Utility collaboration on strategic island, curtailment order, etc.

Greener
Objective: Meet EE/RE Goals, Good Citizen, Reduce Emissions

- Strategy – On and adjacent to base resource development
- Tactics
  - Tie purchase to on-base/adjacent projects
  - At minimum tie purchase to "electrically adjacent" projects (same RTO/ISO/control area)
  - Offset mission related emissions
  - Negotiate with local air quality board on size/contents of "cap," acceptable trade offs, if possible.

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Smarter
Objective: Meet Renewable/ EE Requirements

- Strategy – Purchase renewables
- Tactic
  - Purchase least-cost (lowest premium) resources to meet at least minimal renewable requirement
  - Purchase/develop additional renewables at sites where cost is lower/pay back better than EE project costs

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2004 Energy

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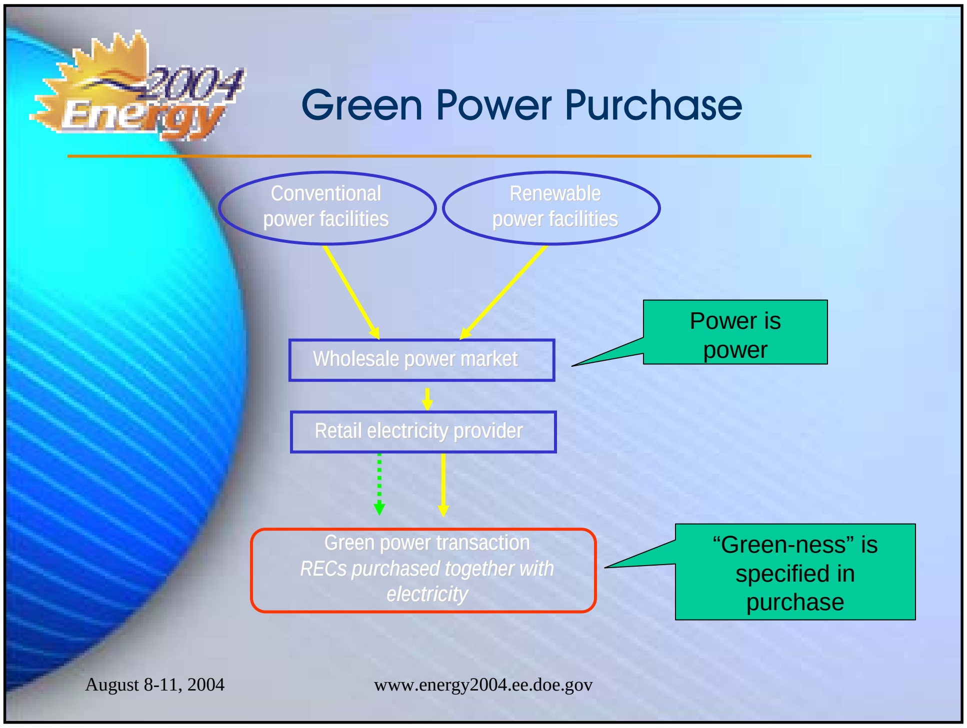
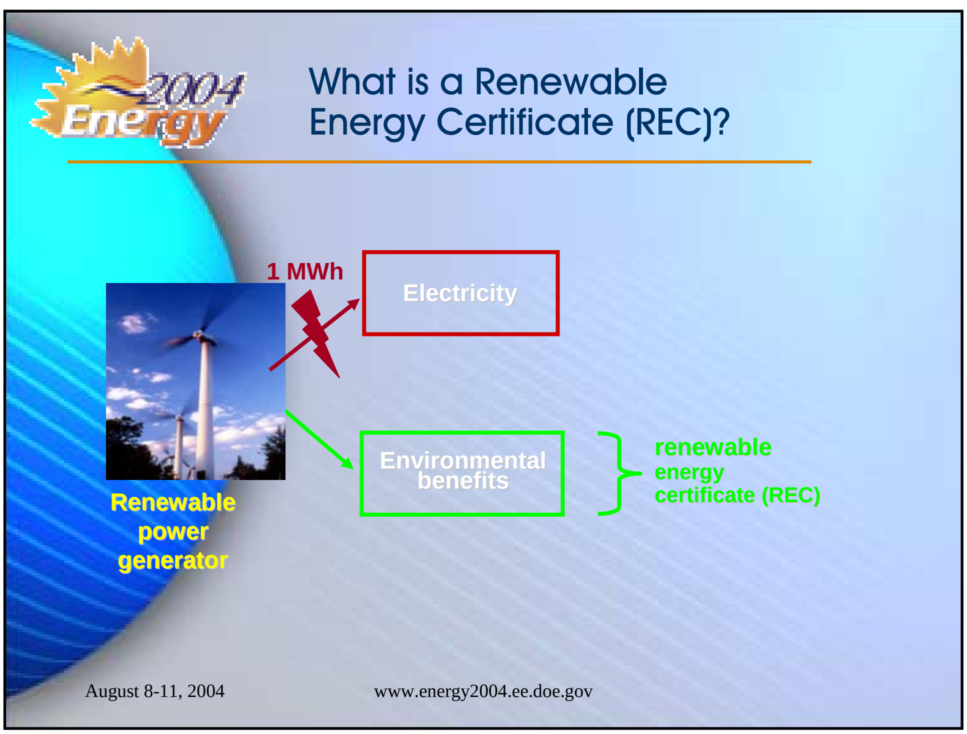
Execution Options

2004 Energy

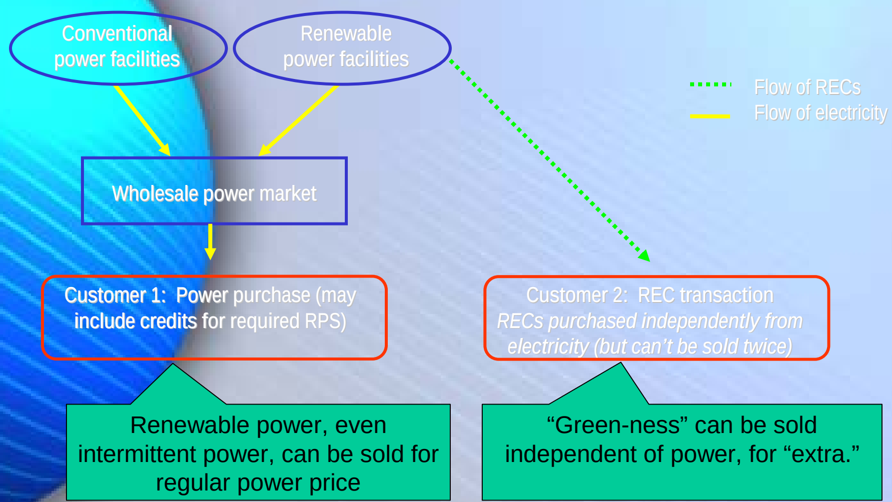
Three Major Options

- Renewable Power Purchase
  - Contract for output from specific project(s) to be delivered to specific installations
- Green Tag Purchase
  - Pay price differential for renewable (above conventional power cost)
- Green Tag "with teeth"
  - Require tag to come from local source at fixed (lower) price, require documentation of progress towards development of new resources near installation to support security/reliability.


2004 Energy
Green Power Purchase
Conventional power facilities
Renewable power facilities
Wholesale power market
Power is power
Retail electricity provider
Green power transaction
RECs purchased together with electricity
"Green-ness" is specified in purchase
August 8-11, 2004
www.energy2004.ee.doe.gov


2004 Energy
What is a Renewable Energy Certificate (REC)?
1 MWh
Electricity
Environmental benefits
renewable energy certificate (REC)
Renewable power generator
August 8-11, 2004
www.energy2004.ee.doe.gov

Green "Credits" (RECs) are Fungible Assets



Purchase: Pros

- Tie price to specific project
  - Could be below current market price
  - Provides price stability
  - Provides hedge against higher future prices (for green or dirty power)
- Location specific for energy security/reliability, potential emissions trading
- Long term contract provides leverage with developers of new resources
- Direct benefit to development of on-site resources (provides ready market for on-site projects)

Purchase: Cons

- State regulations/utility objections often prevent
- Difficult to contract for resources that aren't built and difficult to contract long term
- Power has to be firmed, shaped, and wheeled to multiple sites through multiple utilities
- Project may not be adjacent to all installations getting power
- Performance and cost of project unknown in advance (may not be stable or good price hedge)
- Comparable terms for transmission difficult to obtain (few developers or ANY projects can obtain long-term firm transmission access)

Green Tag: Pros

- Not tied to specific plant or location
  - No wheeling required
  - No firming required
  - Don't have to deal with local utility or regulations
  - Can purchase where local renewable potential is low or costs high
- Can be purchased independently by each installation (no need to aggregate)

Green Tags: Cons

- Payment separate from and above regular power bill
  - Can't reduce bill unless tag resold (not always possible)
  - Doesn't provide a price hedge unless tag sold
- No security/reliability value because "footloose" (not local)
- Can't offset air emissions
- Some uncertainty about nature of a tag (is it "power" or a derivative?)
- Not clear that aggregation will reduce price

Green Tags with "Teeth" Concept

- Tags purchased from specific, new project on long term contract to provide developers with fungible asset and buyers with "fixed" price
- Potential for immediate delivery under contract, with ramp (low to start, up to 100% after new resources on-line)
- Power tied to new resources near installations receiving tags after X years
- Provider required to show "progressive" evidence (the "teeth") of resources noted above (land lease, permits, construction, etc.)

Green Tags with "Teeth": Pros

- Tied to local development
  - Enhances local energy security/reliability
  - Increases developer interest in on-site projects
  - May be able to use to offset air emissions
- Local source, but no wheeling complications
  - Can be done without utility cooperation
  - No firming or transmission required
- Long term contract
  - Should reduce price premium
  - May provide price hedge feature
  - Could be tailored to construction schedule of each resource (i.e., longer ramp for geothermal)
  - Easier to justify contract for future resource
- Amenable to aggregation, quantity discount
- Concept easily adapted to any region (where there is power pool and REC market)

Green Tags with "Teeth": Cons

- Payment separate from and above regular power bill
  - Can't reduce bill unless tag resold (not always possible)
  - Doesn't provide a price hedge unless tag sold
- Risk that developer just takes premium during "ramp up" and doesn't develop local resource (despite the "teeth")

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Proposed Strategies

Purchases need to Adapt to Markets/Options

- Green power purchases require green power to be delivered. That means it has to be:
  - In the transmission grid
  - In a "choice" state
- Green power developers need markets to sell to, so:
  - Few projects exist where resources are poor (and costs would be high)
  - Few projects exist where there is no "demand," such as an RPS.
- Price premiums require large purchases (via load aggregation) and long term contracts – These are MAJOR procurement challenges (have to work with multiple sites, agencies, procurement staff, etc.)

Procurement Options

- Aggregate behind a PMA
- Aggregate in "choice" state or region behind DESC
- "Special deal" with utilities in "non-choice" states
- "One off" deals one installation at a time

Current Strategies

- WAPA Central Valley
- WAPA Arizona
- PJM
- Florida (Cape Canaveral deal)
- Alaska
- BPA Post 2006/2011
- Tags to bridge to "choice"

WAPA Central Valley

- WAPA co serves DoD loads in PG&E area
- WAPA allocation being reduced ~50%
- Customers need to choose between 100% WAPA or PG&E, but WAPA will have to "make up" difference from market
- Requesting 50 to 100% green power quotes in power supply RFP to be issued in the Fall

WAPA Arizona

- Arizona is the only "choice" state in WAPA area
- Plan to solicit green power from competitive suppliers (WAPA will continue to provide what they do now, supplemented by competitive supply)

Pennsylvania, Jersey, Maryland (PJM)

- Area is in an RTO (the PJM RTO)
- All states are "choice" states and DESC and GSA active in market
- RPSs being adopted by all states
- PJM RTO may implement REC market
- Renewable resources are available (wind, biomass) and developers are "ready"
- May be candidate for "tags with teeth"

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Florida

- Major US wind developer (FPL) is in state
- Wind is so so, but Cape Canaveral site is one of the best in the state
- Wind would displace current power at same price
- Need to overcome siting, radar, other issues

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Alaska

- Anchorage utility has identified site on DoD land as one of the best
- Project site wouldn't supply much power, just supplement power to two DoD sites
- Utility also wants to develop a better site to supply DoD/Federal loads, but it will take longer (due to island location)

BPA Post-2006/2011

- Traditionally, BPA has refused to serve federal loads being served by BPA customer utilities (despite legal right to do so)
- BPA is proposing a WAPA-like allocation for contracts after 2006/2011
- BPA utilities will have to assume some "supply risk"
- If their DoD loads switch to green power, it will reduce this risk
- Will BPA utilities facilitate aggregate green power purchases by DoD?

Tags to Bridge

- AF and DESC already purchasing RECs from Texas REC market
- DESC already purchasing tags elsewhere, but in small quantities
- Can we do something innovative to procure large quantities of RECs at low prices until more "choice" is available?

Down the Road

- WAPA II-- California outside the Central Valley, when/if California allows retail choice (probably around 2010)
- Montana/Dakotas – Coal/Wind integration option. Coal plants built around 2010 will include new transmission lines that can tap "trapped" wind resources in these states.